Project B-209

EXHAUST SYSTEM PARTS

A Manufacturing Opportunity in Georgia

Prepared for

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Summary

A Georgia manufacturer of exhaust system parts with annual sales of $2 million can expect cost reductions of between $89,000 and $204,000 over existing midwestern plants on sales to the Southeast.

In Georgia and the five surrounding southeastern states[1/] manufacturers' sales of exhaust system parts in 1962 were approximately $15 million. The requirements for these products in the Southeast should reach $20 million in 1970.

The main distribution point in the Southeast is Atlanta, Georgia, with 13% of all automotive equipment wholesale sales in the six southeastern states.

Since most of the exhaust system parts sold in the Southeast are shipped into the area from without, a Georgia manufacturer servicing the southeastern market would have the following advantages over existing midwestern suppliers:

1. Freight Savings. Freight costs from Atlanta to the southeastern area for exhaust system parts valued at $2 million are $27,000 to $33,000 less than from the Midwest to the same area.
2. Labor Cost Savings. Production labor necessary to manufacture $2 million worth of exhaust parts costs $59,000 to $177,000 less in Georgia than in Illinois, Indiana, Ohio, or Michigan.

Together these savings may equal an increased profit on sales of 10%.

In addition to these cost savings a Georgia manufacturer would realize other less tangible but equally important advantages. They are:

1. delivery time savings,
2. greater labor productivity,
3. increased wholesale representation,
4. reduction of warehouse needs, and
5. reduction in return goods.

1/ Alabama, Florida, Georgia, North Carolina, South Carolina, and Tennessee.

MARKETS

National Market for Automotive Parts

In 1962 the value of shipments of automotive replacement parts and accessories in the U. S. was $2.60 billion. This represents an annual increase of 5.7% from the 1954 total of $1.67 billion. By using sales for the nine years from 1954 through 1962 as a basis for a first degree projection, a forecast of a $3.41 billion automotive parts market can be made for 1970. (See Figure 1.)

The greatest demand for replacement parts is for passenger cars which are more than three years old.

The 1962 registration of 44.4 million cars more than three years old is an increase of 37.5% over the 1954 figure of 32.3 million cars. A first degree projection based on registrations for these and the intervening years indicates that approximately 58.5 million cars four years old or older will be registered in 1970. (See Figure 2.)

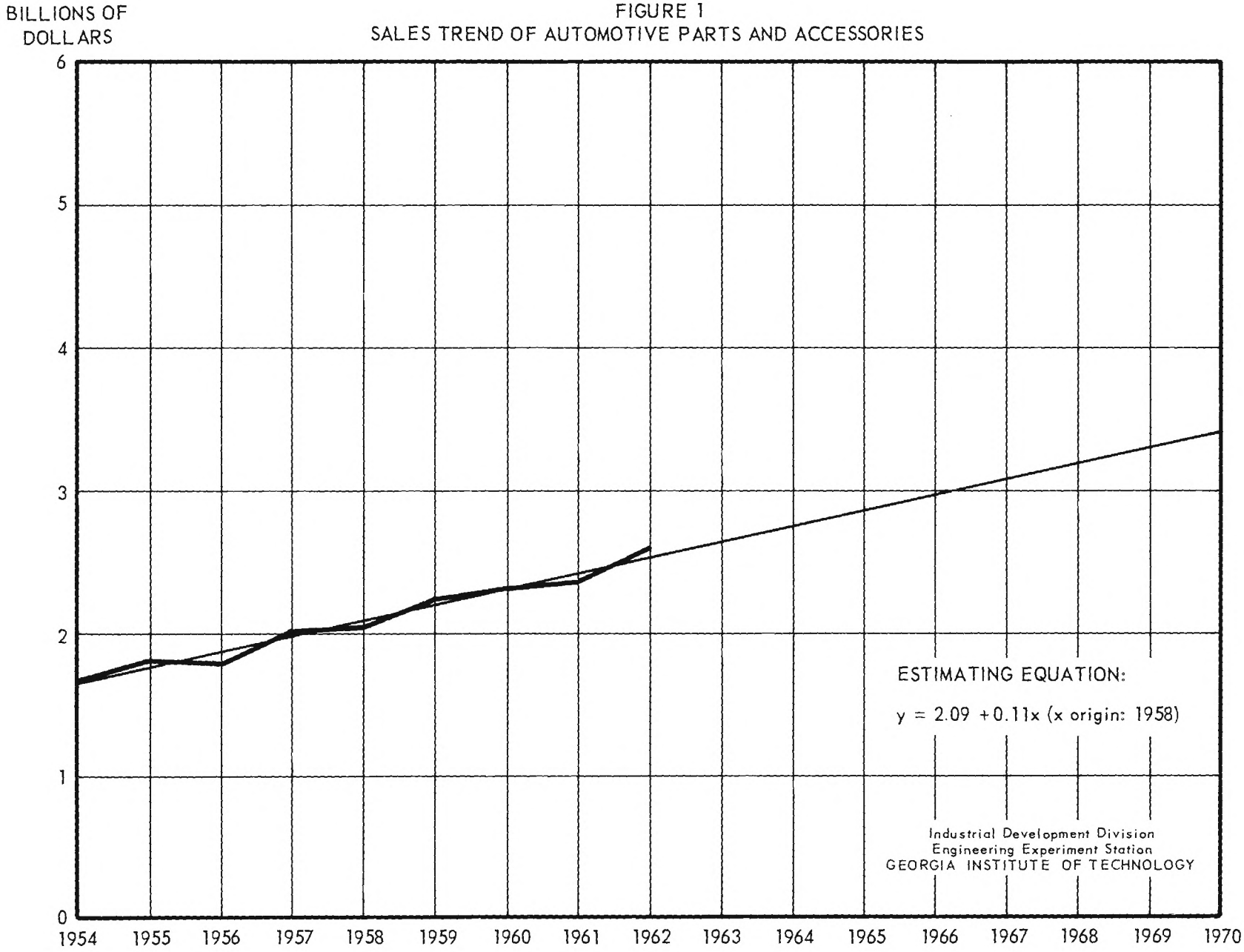
Southeastern Market for Exhaust System Parts

A comparison of the number of registered motor vehicles more than three years old in the Southeast[1/] and the nation over a nine-year period, as given in Table 1, illustrates the proportional automotive growth of the southeastern area.

Since the automotive parts industry depends upon the motor vehicle industry for a market, there exists an extremely high coefficient of correlation (0.97) between replacement parts sales and national motor vehicle registration of four-year-old and older automobiles. (See Appendix 1.) Because of this high correlation, it can be assumed that the Southeast accounts for 11.9% of the nation's total consumption of automotive replacement parts and accessories. It is estimated, therefore, that of the $2.60 billion worth of automotive replacement parts and accessories sold in 1962, approximately $309 million worth reached consumers in the six southeastern states. If the growth of the auto parts market in the Southeast no more than equals that of the U. S. over the next eight years, this figure should increase to $405 million in 1970.

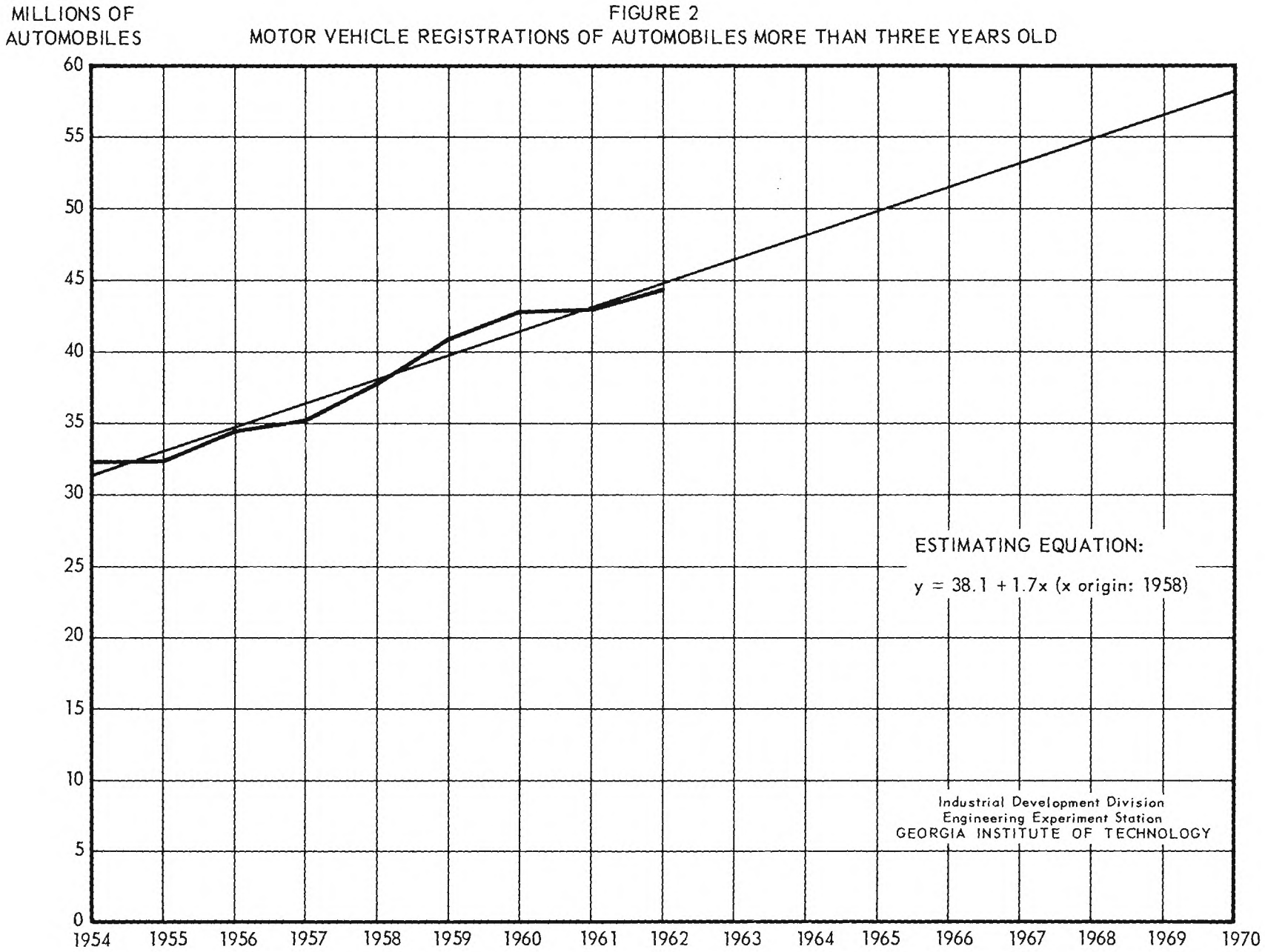
1/ Alabama, Florida, Georgia, North Carolina, South Carolina, and Tennessee.

FIGURE 1
SALES TREND OF AUTOMOTIVE PARTS AND ACCESSORIES



SOURCE: Automotive Facts and Figures, 1963

FIGURE 2
MOTOR VEHICLE REGISTRATIONS OF AUTOMOBILES MORE THAN THREE YEARS OLD



SOURCE: Automotive Industries, Statistical Issues, 1955–1963

Table 1

COMPARISON OF REGISTERED MOTOR VEHICLES
MORE THAN THREE YEARS OLD
IN THE SOUTHEAST AND THE U. S.

Year	Number of Vehicles Registered (in thousands)		Southeastern Percentage of U. S.
	Southeast	U. S.	
1954	3,452	32,267	10.7
1955	3,532	32,405	10.9
1956	3,816	34,460	11.1
1957	4,005	35,130	11.4
1958	4,376	37,730	11.6
1959	4,806	40,834	11.8
1960	5,073	42,750	11.9
1961	5,108	42,880	11.9
1962	5,310	44,446	11.9

Source: Automotive Industries, Statistical Issues, 1955-1963

Numerous automotive wholesalers in the area place exhaust system purchases at almost 5% of their total expenditures for motor vehicle parts and accessories. This would indicate that the market for exhaust system parts in the Southeast was approximately $15 million in 1962, and this regional market should grow to approximately $20 million by 1970.

Wholesale Sales in the Southeastern Market

The largest portion of the output of the multi-billion-dollar automotive replacement parts industry is distributed through automotive equipment wholesalers. In 1958 the national wholesale sales of these merchants totaled $4.15 billion, of which $3.85 billion represented new automotive parts and accessories. Wholesale sales of new automotive parts in the Southeast were $472 million. This is 12.2% of the national figure and is comparable with the Southeast's portion of registered automobiles more than three years old.

Although there are no wholesale sales statistics at the city level for automotive parts and accessories, data for all automotive equipment are adaptable for comparison. Of the $593.3 million worth of automotive equipment (all

types of operations) wholesaled in the southeastern area, over 50% was in seven cities. The wholesale sales in 1958 for the cities (with a comparative proportional value for each city) are shown in Table 2.

Table 2

WHOLESALE SALES OF AUTOMOTIVE EQUIPMENT
IN LEADING DISTRIBUTION CITIES IN THE SOUTHEAST

(1958)

City	Wholesale Sales (millions of dollars)	Percentage of Total Sales in Seven Cities
Atlanta, Ga.	78.9	26
Jacksonville, Fla.	46.6	15
Memphis, Tenn.	43.1	14
Charlotte, N. C.	38.0	13
Birmingham, Ala.	35.8	12
Nashville, Tenn.	31.6	10
Miami, Fla.	29.4	10
	303.4	100

Source: U. S. Bureau of the Census, 1958 Census of Business -- Wholesale Trade

Atlanta distributed over 13% of all the automotive equipment wholesaled in the six southeastern states.

ADVANTAGES OF A GEORGIA LOCATION

Lower Freight Costs

Metropolitan Atlanta wholesales the greatest volume of replacement automotive parts in the Southeast and is ideally located within a ring formed by other cities leading in replacement parts distribution. (See Map 1.) Because of the central location, distinct freight advantages may be enjoyed by a Georgia manufacturer over present midwestern suppliers of automotive replacement parts to the southeastern area.

Freight rates for exhaust system parts from Atlanta and cities now supplying the Southeast with these parts to the southeastern cities which wholesale the largest volumes of automotive replacement parts are listed in Table 3.

Table 3

TRUCKLOAD FREIGHT RATES FOR EXHAUST SYSTEM PARTS

(in cents per 100 pounds)

	FROM:					
TO:	Atlanta Ga.	Chicago Ill.	Detroit Mich.	Franklin Ind.	Jackson Mich.	Toledo O.
Atlanta	33	161	161	149*	159	153
Birmingham	66	151	161	142*	156	153
Charlotte	103	175	164	164*	167	156
Jacksonville	120	201	201	182	198	193
Memphis	108	121*	156	131*	148	148
Miami	172	269	269	240*	265	262
Nashville	92	118*	137	108*	129	129

*Commodity rate

Note: Rates based on minimum truckload weight of 22,000 pounds.

A basis for computing average freight rates from different points of origin to the southeastern market can be established by multiplying each destination city's share of automotive equipment wholesale sales (Table 2) by the freight rate to that city (Table 3) from each point of origin. The average freight rates to the Southeast from Atlanta and those cities presently supplying the southeastern market are shown in Table 4.

MAP 1
PRINCIPAL DISTRIBUTING POINTS FOR EXHAUST SYSTEM PARTS IN THE SOUTHEAST
AND LOCATIONS OF EXHAUST SYSTEM SUPPLIERS TO THE SOUTHEASTERN MARKET

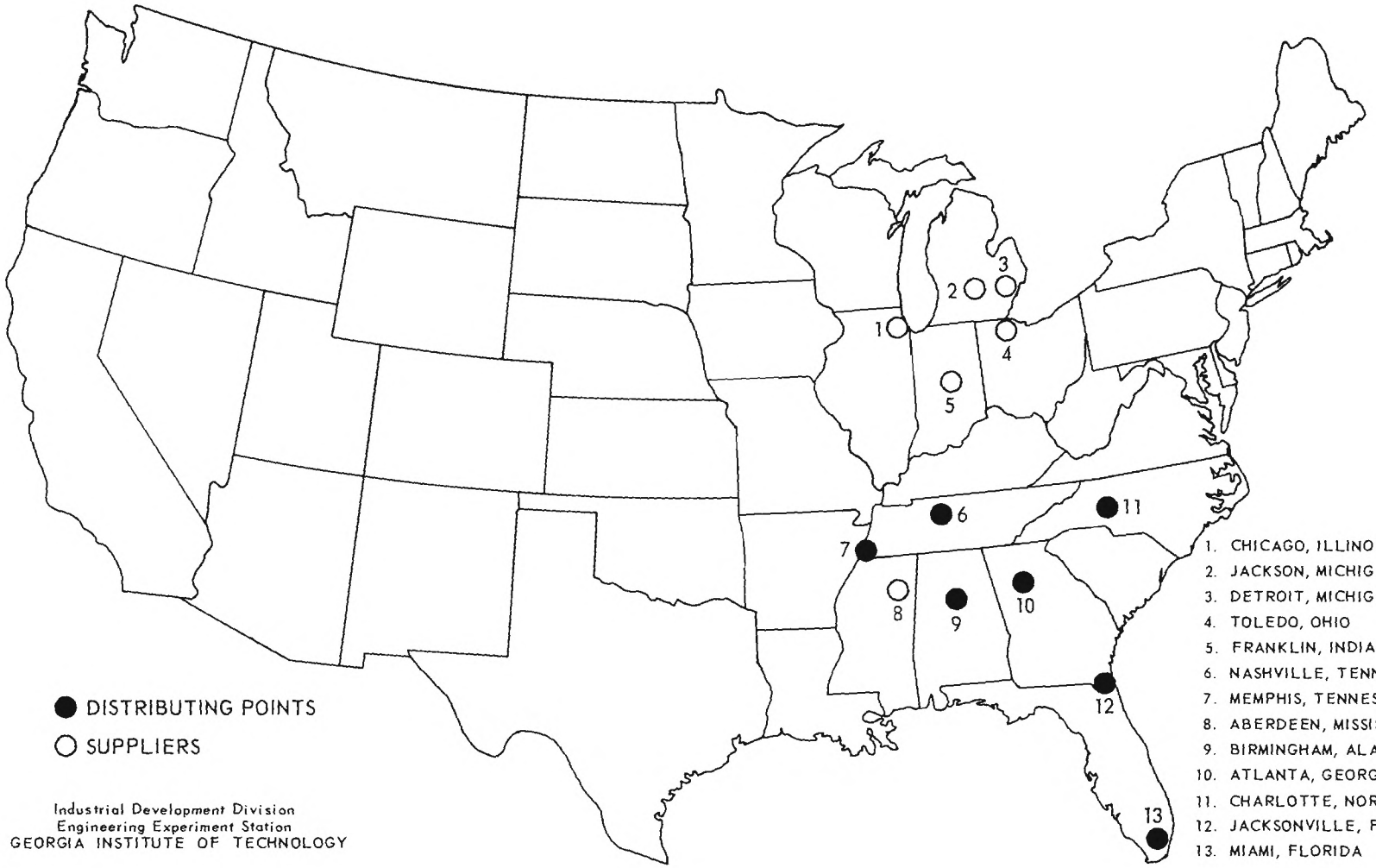


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Table 4

AVERAGE FREIGHT RATES TO THE SOUTHEASTERN MARKET

(in cents per 100 pounds)

TO:	Per Cent of Sales	FROM: Atlanta Ga.	Chicago Ill.	Detroit Mich.	Franklin Ind.	Jackson Mich.	Toledo O.
Atlanta	26	9	42	42	39	41	40
Birmingham	12	8	18	19	17	19	18
Charlotte	13	13	23	21	21	22	20
Jacksonville	15	18	30	30	27	30	29
Memphis	14	15	17	21	18	21	21
Miami	10	17	27	27	24	27	26
Nashville	10	9	12	14	11	13	13
Average Rate To Southeast		89	169	174	157	173	167

The freight costs of an Atlanta exhaust system manufacturer would be between 51% (Detroit, Michigan) and 57% (Franklin, Indiana) of those of any major midwestern manufacturer presently selling to the Southeast.

Automotive wholesalers interviewed in the Atlanta area place their average cost per 22,000-pound truckload of mixed exhaust parts at 50 cents per pound. At this rate, a manufacturer producing $2 million worth of exhaust system parts will ship approximately 180 truckloads annually. Freight costs from Atlanta and cities serving the southeastern area can be computed by multiplying the average freight rates from each city by the size and number of truckloads shipped:

Detroit	$1.74	x	220	x	180	= $68,904
Jackson	1.73	x	220	x	180	= $68,508
Chicago	1.69	x	220	x	180	= $66,924
Toledo	1.67	x	220	x	180	= $66,132
Franklin	1.57	x	220	x	180	= $62,172
Atlanta	0.89	x	220	x	180	= $35,244

An Atlanta plant producing $2 million worth of exhaust system parts for consumption in the southeastern area could save in shipping costs the following amounts over manufacturers in the other competing cities:

Detroit	$33,660	Toledo	$30,888
Jackson	$33,264	Franklin	$26,928
Chicago	$31,680		

Delivery Time Savings

Delivery time from Atlanta to cities in the Southeast is a full day less than from any of the midwestern cities now supplying exhaust system parts to the same area. Shipments from Atlanta to most cities in the Southeast have first morning delivery, while shipments from manufacturers in the Midwest to the same cities have second morning delivery.

Greater Productivity

The return for the wage dollar spent in the manufacture of transportation equipment is greater in Georgia than in any of the midwestern states discussed in this report. By dividing value added by manufacture by production wages for transportation equipment manufacturers in each of the compared states,[1/] production values per wage dollar may be computed. In 1961, they were:

Georgia	$3.11
Ohio	$2.85
Illinois	$2.83
Michigan	$2.78
Indiana	$2.44

Georgia has one of the lowest work stoppage rates in the nation.[2/] Numerous metalworking companies with branches throughout the country reveal that absenteeism induced by climatic conditions is at its lowest in the Georgia plants.

Lower Labor Costs

A sizable segment of the monies expended in the manufacture of automotive products is for labor. By dividing annual sales volume by production value per wage dollar, a production labor cost may be calculated:

Indiana	$2,000,000	÷	$2.44	=	$820,000
Michigan	2,000,000	÷	$2.78	=	$719,000
Illinois	2,000,000	÷	$2.83	=	$707,000
Ohio	2,000,000	÷	$2.85	=	$702,000
Georgia	2,000,000	÷	$3.11	=	$643,000

1/ U. S. Bureau of the Census, Annual Survey of Manufactures, 1961.

2/ U. S. Department of Labor, 1961 Statistical Supplement -- Monthly Labor Review.

These figures indicate that a Georgia manufacturer of automotive products can anticipate the following labor cost savings over plants located in the Midwest:

Indiana	$177,000
Michigan	$ 76,000
Illinois	$ 64,000
Ohio	$ 59,000

Additional Advantages

A Georgia exhaust systems manufacturer supplying the Southeast would gain the following additional advantages over competitors manufacturing out of the area:

1. Increased territory representation. Since availability is an important criterion in merchandising exhaust system parts, the tendency for wholesalers to patronize local manufacturers is strong. This would give a Georgia producer more southeastern market area coverage than other suppliers.
2. Decreased demand for warehousing. A Georgia manufacturing plant, being centrally located in the market area, could ship direct to its wholesalers both regular and emergency orders. Warehouse operations could be greatly lessened.
3. Reduction in returns. With increased availability due to the proximity of the manufacturer, the wholesaler need stock only popular, fast-selling parts. Returns of obsolete and slow-moving merchandise would be minimized.

Raw Materials

Sheet and tubular steels, the principal raw materials used in the manufacture of exhaust system parts, are readily available in Georgia and the surrounding states.

CONCLUSION

There exists a sizable market for exhaust system parts in the Southeast, with further growth of that market expected.

A Georgia producer, benefiting from the absence of contending manufacturing operations in the area, can establish a more competitive position over present suppliers with:

1. freight savings,
2. lower labor costs,
3. faster delivery time,
4. greater productivity,
5. more complete wholesale representation,
6. less need for warehouse space, and
7. less returns of merchandise.

The freight and labor savings for an Atlanta plant with a volume of $2 million would be between $89,000 and $204,000. This is equal to an increased profit on sales of 4.4% to 10.2%.

APPENDIX

Appendix 1

CORRELATION BETWEEN AUTOMOTIVE REPLACEMENT PARTS
AND MOTOR VEHICLE REGISTRATIONS OF AUTOMOBILES
MORE THAN THREE YEARS OLD

Year	X	Y	x (X-A)	y (Y-A)	xy	x^2	y^2
1954	167	323	-42	-58	2436	1764	3364
1955	181	324	-28	-57	1596	784	3249
1956	178	345	-31	-36	1116	961	1296
1957	201	351	- 8	-30	240	64	900
1958	204	377	- 5	- 4	20	25	16
1959	225	408	16	27	432	256	729
1960	231	428	22	47	1034	484	2209
1961	236	429	27	48	1296	729	2304
1962	260	444	51	63	3213	2601	3969
Sum	1883	3429			11383	7668	18036
Average (A)	209	381					

Number (N) = 9

$$\sigma_x = \sqrt{\frac{\Sigma x^2}{N}} = \sqrt{\frac{7668}{9}} = \sqrt{852} = 29$$

$$\sigma_y = \sqrt{\frac{\Sigma y^2}{N}} = \sqrt{\frac{18036}{9}} = \sqrt{2004} = 45$$

$$\text{Coefficient: } r = \frac{\Sigma xy}{N\sigma_x\sigma_y} = \frac{11383}{9(29)(45)} = \frac{11383}{11745} = 0.97$$

X = Automotive replacement parts

Y = Motor vehicle registrations of automobiles more than three years old